

### AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims.

#### Listing of Claims

1.     *(Amended)*     A connector seal device for connecting a branch pipe in combination with to a transverse opening (2), ~~as can be found in the pierced wall of a main pipe, pipeline (1), a shaft, or the like, for which the diameter can fluctuate considerably, wherein this~~ the connector seal device comprising ~~comprises the following features:~~
  - a)     [[A]] a hollow~~[-plug type]]~~ elastomer insert (10), composed in part of a first relatively soft material, comprises the elastomer insert including: a flexible support collar; (12) and a sealing wall region (11) with an ~~a tapered~~ inside surface tapered in an insertion direction and having first locking ring zones; (14) and an outside surface (13), ~~which is generally adapted to fit a diameter of the transverse opening (2);~~
  - b)     [[A]] a pipe union (20) of a relatively harder second material, the second material being harder than the first material, the pipe union including: ~~is provided with an engagement end (21); with a tapered~~ an outside surface (23) that can tapered in the insertion direction, the outside surface having second locking ring zones and being adapted to cooperate with the inside surface (14) of the elastomer insert; (10), and a socket end (22) ~~which cooperates~~ adapted to cooperate with the branch pipe~~[[;]], whereby~~
  - e)     ~~The inside surface (14) of the elastomer insert (10) and the outside surface (23) of the pipe union (20) are tapered in the insertion direction (IN) for inserting the parts (10, 20) into the transverse opening (2) and/or the direction they are inserted into each other;~~

**characterized in that**

- d) ~~The sealing wall region (11) with the tapered inside surface (14) is provided with locking ring zones (16) which are inclined in insertion direction (IN) and toward the inside of the hollow space in the elastomer insert, and~~
- e) ~~The tapered outside surface (23) of the engagement end (21) is also provided with locking ring zones (26) which are inclined toward the outside, counter to the insertion direction (IN), as seen from the engagement end (21);~~
- f) ~~Wherein during the fitting of when the elastomer insert (10) is inserted into the transverse opening (2) and the ~~following assembly of the pipe union (20) and is inserted into~~ the elastomer insert (10), the first and second locking ring zones (16, 26) engage in the manner of ratchet teeth and ~~snap into ring-shaped grooves (16c, 26c) and wherein the elastomer insert (10) is expanded step-by-step and pressed further against the transverse opening (2) through the continued displacement of the pipe union (20) in the~~ insertion direction (IN).~~

2.      *(Amended)*      The connector seal device as defined in claim 1,  
~~characterized in that wherein the locking ring zones have a (16, 26) form a tooth with saw-~~  
~~tooth shaped type cross section and, as compared to the feature of the sealing wall region (11),~~  
~~are composed of a third relatively harder material, the third material being harder than the first~~  
~~material.~~

3. (Amended) The connector seal device as defined in claim 1 ~~or 2~~,  
~~characterized in that~~ wherein the locking ring zones ~~(16, 26)~~ are provided with a sliding agent.

4. (Amended) The connector seal device as defined in claim 1 ~~one of the claims 1~~  
~~to 3~~, ~~characterized in that the taper selected for~~ wherein the tapered inside surface (14) of the  
elastomer insert ~~is sufficient to form~~ is adapted to form an end stop or assembly stop for the  
insertion of the pipe union (20).

5. (Amended) The connector seal device as defined in claim 1 ~~one of the claims 1~~  
~~to 4~~, ~~characterized in that the basic surfaces of~~ wherein when the pipe union is inserted into the  
elastomer insert, the elastomer insert (10) and the pipe union (20) ~~for a connector seal device that~~  
~~is already assembled or which must be assembled~~ are arranged substantially concentric, wherein  
a first centering section guide surfaces (15) on the elastomer insert is arranged to effectively  
cooperate with a second centering section guide surfaces (25) on the pipe union.

6. (Amended) The connector seal device as defined in claim 1 ~~one of the claims 1~~  
~~to 5~~, ~~characterized in that~~ wherein the outside surface (13) of the elastomer insert (10) is  
substantially cylindrical or is slightly tapered in insertion direction (IN) and includes ~~is provided~~  
~~with~~ barb-shaped projections (19), which arranged to fit against the transverse opening (2) during  
the installation of the elastomer insert into the transverse opening in the insertion direction, but  
which and block any movement of the elastomer insert counter to the insertion direction.

7. (Amended) The connector seal device as defined in claim 1 ~~one of the claims 1 to 6~~, characterized in that wherein the sealing wall region (11) of the elastomer insert (10) is embodied as a tubular section with sufficient length to cover ~~the~~ a reinforced area ~~areas~~ (8) which may have been cut during the insertion of the transverse opening (2).

8. (Amended) The connector seal device as defined in claim 7, characterized in that wherein the outside surface (13) of the elastomer insert (10) is coated with an anti-corrosion agent and/or an adhesive, ~~which is~~ the anti-corrosion agent and/or adhesive being protected by a cover foil during the storage and transport of the connector seal device, until just prior to the installation of the connector seal device in the transverse opening.

9. (Amended) The connector seal device as defined in claim 1 ~~one of the claims 1 to 8~~, characterized in that wherein the sealing wall region (11) of the elastomer insert (10) comprises at least one groove ~~one or several cavities~~ filled with a sealing agent adapted to be released during installation of the pipe union in the elastomer insert, ~~wherein these cavities open up under pressure resulting from the installation of the pipe union (20) and release the sealing agent, thereby causing a secondary sealing effect.~~

10. (Amended) The connector seal device as defined in claim 1 ~~one of the claims 1 to 9~~, characterized in that wherein the support collar (12) of the elastomer insert (10) is composed of a harder material than the sealing wall region (11).

11. (Amended) The connector seal device as defined in claim 1 ~~one of the claims 1 to 10, characterized in that~~ wherein the support collar (12) of the elastomer insert (10) is adapted to fit the diameter outer circumference of the main pipe (1) ~~and that the support collar (12) is intended for the transverse opening (2) in this main pipe.~~

12. (Amended) The connector seal device as defined in claim 1 ~~one of the claims 1 to 11, characterized in that~~ further comprising a second hollow-plug type elastomer insert (30) is provided, ~~which is in part composed~~ in part of the first ~~a relatively soft material, the second elastomer insert adapted to be and is inserted from an~~ the inside (4) of the main pipe (1) into the transverse opening; ~~and (2), along with a hollow press-on cone adapted to be inserted into the second elastomer insert, wherein the second elastomer insert and the hollow press-on cone include (40) with locking ring zones corresponding to those on the elastomer insert and the pipe union, respectively (20).~~

13. (Amended) The connector seal device as defined in claim 12, ~~characterized in that the~~ wherein an engagement end of the hollow press-on cone (40) ~~is provided with~~ includes a support flange (42), ~~which is adapted to fit against the support collar (32) of the second elastomer insert (30).~~

14. (Amended) The connector seal device as defined in claim 12 ~~or 13,~~ ~~characterized in that~~ wherein the pipe union includes (50) ~~is provided with a pipe extension (51)~~

~~which fits~~ adapted to fit against a ring-shaped seal (52) on the second elastomer insert or against the hollow press-on cone, ~~so as to form a seal.~~

15. (Amended) The connector seal device as defined in claim 12 ~~or 13~~, ~~characterized in that~~ wherein the pipe union (50) has a pipe extension (51) and/or a separate connecting piece, so that it is adapted to ~~can~~ form a force-locking connection with the hollow press-on cone (40).

16. (Amended) The connector seal device as defined in claim 1, ~~one of the preceding claims, characterized by~~ further comprising at least one rope (43) of a sealing material that is capable of swelling.

17. (Amended) The connector seal device as defined in claim 16, ~~characterized in that~~ wherein the sealing material of the rope is configured to swell (43) ~~swells~~ when it comes in contact with water.

18. (Amended) The connector seal device as defined in claim 16 ~~or 17~~, ~~characterized in that~~ wherein the at least one rope (43) of ~~[[a ]]sealing material capable of swelling~~ is arranged inside a ring-shaped groove (16e, 26e) of ~~[[a]]~~ at least one of the first or second locking ring zones ~~zone~~ (16, 26).

19. *(Amended)* The connector seal device as defined in claim 1, ~~one of the preceding claims, characterized by further comprising~~ at least one sealing element adapted to (44) ~~which can~~ be activated by heat.

20. *(Amended)* The connector seal device as defined in claim 19, ~~one of the preceding claims, characterized in that wherein~~ the sealing element (44) comprises a material (45) which increases in volume under the effect of heat.

21. *(Amended)* The connector seal device as defined in claim 19 ~~or 20~~, ~~characterized in that wherein~~ the sealing element (44) ~~is provided with~~ includes an electric resistance heater (46).

22. *(Amended)* The connector seal device as defined in claim 1, ~~one of the preceding claims, characterized by further comprising~~ at least one pressure sensor (49) for detecting the contact pressure on a part ~~one of the parts (10, 20, 30, 40, 50)~~ of the connector seal device when the connector seal device is installed in the transverse opening of the main pipe.

23. *(Amended)* The connector seal device as defined in claim 22, ~~characterized by wherein the at least one pressure sensor comprises several pressure sensors (49) for detecting the contact pressure, wherein these sensors are arranged uniformly spaced apart in a circumferential direction of a part~~ ~~one of the parts (10, 20, 30, 40, 50)~~ of the connector seal device.

24. *(Amended)* The connector seal device as defined in claim 22 ~~or 23~~,  
~~characterized in that~~ wherein the at least one pressure sensor ~~(49)~~ is arranged on or in one of the  
~~parts for the connector seal device, namely the elastomer insert (10, 30), the pipe union (20), or~~  
~~the a hollow~~ press-on cone (40).

25. *(Amended)* The connector seal device as defined in claim 22 ~~or 23~~,  
~~characterized in that~~ wherein the at least one pressure sensor ~~(49)~~ is arranged on or in a ring-  
shaped seal ~~(52)~~.

26. *(Amended)* The connector seal device as defined in claim 22, ~~one of the~~  
~~preceding claims, characterized by~~ further comprising at least one transponder and/or data carrier  
~~(59)~~ for detecting, storing, and/or transmitting the contact pressure values measured on the part  
~~one of the parts (10, 20, 30, 40, 50)~~ of the connector seal device.

27. *(Amended)* The connector seal device as defined in claim 26, ~~characterized in~~  
~~that~~ wherein the at least one transponder and/or data carrier ~~(59)~~ is arranged on or in one of ~~the~~  
~~parts of the connector seal device, namely the elastomer insert (10, 30), the pipe union (20), or~~  
~~the a hollow~~ press-on cone (40).

28. *(Canceled)*